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EXAMINER

TORRES, JUAN A

ART UNIT PAPER NUMBER

2611

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,912

Applicant(s)

MOOSE, PAUL H.

Examiner

Juan A. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7,8,10-15 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7,8,10-15 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

The modifications to the claims were received on 03/20/2006. These modifications are accepted by the Examiner.

In view of the amendment filed on 03/20/2006, the Examiner withdraws the claim objections to claims 12 and 13 of the previous Office action.

Claims 7, 8, 10-15, 22 and 24 are objected to because of the following informalities:

As per claim 7 the recitation in lines 1-3 of claims 7 "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the receiver"; is improper, it is suggested to be changed to "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the transmitter" (see claim 23).

As per claim 24, it is objected because it depends directly from claim 7.

As per claim 8 the recitation in lines 1-3 of claims 8 "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the receiver"; is improper, it is suggested to be changed to "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the transmitter" (see claim 23).

As per claims 10-14 and 22, they are is objected because it depends directly from claim 7.

As per claim 15 the recitation in lines 1-3 of claims 15 "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the receiver"; is improper, it is suggested to be changed to "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the transmitter" (see claim 23).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7, 8-14, and 22-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The amended and new claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As per claim 7, the specification doesn't disclose, "correlating different portions of the demodulated synchronization signal to determine an integer portion of the frequency offset".

As per claim 24, it is rejected because it depends directly from claim 7.

As per claim 8, the specification doesn't disclose, "correlating one portion of each of the vectors with an estimate of that portion obtained from the remaining portion of

each of the same vectors to determine the vector with the trail frequency offset of maximum correlation thereby identifying the integer frequency offset".

As per claims 10-14 and 22, they are rejected because they depend directly or indirectly from claim 8.

As per claim 23, the specification doesn't disclose, "correlating different portions of the vectors of sub-carrier modulation values to determine an integer portion of the frequency offset of the carrier frequencies".

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 recites the limitation " correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values " in lines 17-18 of claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 7 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Jones IV (US 6930989 B1).

As per claim 7, Jones IV discloses receiving a digital signal from a transmitter (figures 4 and 5, block 120; column 4 lines 50-65); correcting for a fractional portion of frequency offset (figure 5 block 516; column 4 line 44 to column 5 line 39); demodulating at least one synchronization signal from the digital signal to obtain a demodulated synchronization signal (figure 5 block 520; column 5 lines 49-55); and correlating different portion of the demodulated synchronization signal to determine an integer portion of the frequency offset (figure 5 block 518; column 5 line 40 to column 6 line 30).

As per claim 23, Jones IV discloses receiving at the receiver a digital signal transmitted from the transmitter (figures 4 and 5, block 120; column 4 lines 50-65); correcting for a fractional portion of a frequency offset of the carrier frequencies (figure 5 block 516; column 4 line 44 to column 5 line 39); demodulating at least one synchronization signal from the digital signal to obtain a demodulated synchronization signal (figure 5 block 520; column 5 lines 49-55); forming from the demodulated synchronization signal vectors of sub-carrier modulation values with progressive integer offsets (figure 5 block 520; column 5 line 40 to column 6 line 30); and correlating different portions of the vectors of sub-carrier modulation values to determine an integer portion of the frequency offset of the carrier frequencies (figure 5 block 518; column 5 line 40 to column 6 line 30).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones IV (US 6930989 B1) in view of the IEEE Std 802.11a-1999: "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications High-speed Physical Layer in the 5 GHz Band.

As per claim 8, Jones IV discloses receiving a digital signal from a transmitter (figures 4 and 5, block 120; column 4 lines 50-65); correcting for a fractional portion of frequency offset (figure 5 block 516; column 4 line 44 to column 5 line 39); demodulating at least one synchronization signal from the digital signal to obtain a demodulated synchronization signal (figure 5 block 520; column 5 lines 49-55); forming from the demodulated synchronization signal vectors of subcarrier modulation values with progressive trial integer offsets (figure 5 block 520; column 5 line 40 to column 6 line 30); dividing each of the vectors by known synchronization symbol modulation values to obtain trial vector, for a channel transfer function (figure 5 block 520; column 5 line 40 to column 6 line 30); and correlating one portion of each of the vectors with an estimate of that portion obtained from the remaining portion of each of the same vectors to determine the vector with the trial frequency offset of maximum correlation thereby identifying the integer frequency offset (figure 5 block 518; column 5 line 40 to column 6

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line 30). Jones IV doesn't using long sync symbols. The 802.11a standard discloses combining modulation values from two long sync symbols (section 17.3.3 figure 110. Smart and 802.11a standard are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the synchronization technique disclosed by Smart with the two long sync symbols disclosed by the 802.11a standard. The suggestion/motivation for doing so would have been to synchronize an 802.11 standard compliant device (802.11a standard page 12 section 17.3.3).

As per claim 24, Jones IV discloses claim 7, Jones IV doesn't disclose combining modulation values from two long sync symbols to obtain the demodulated synchronization signal. The 802.11a standard discloses combining modulation values from two long sync symbols (section 17.3.3 figure 110. Smart and 802.11a standard are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the synchronization technique disclosed by Smart with the two long sync symbols disclosed by the 802.11a standard. The suggestion/motivation for doing so would have been to synchronize an 802.11 standard compliant device (802.11a standard page 12 section 17.3.3).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schmidl (US 6546055 B1) discloses carrier offset determination for RF signals having a cyclic prefix. Gardner (US 6862297 B1) discloses wide range

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frequency offset estimation in OFDM systems. Jones (US 6876675 B1) discloses synchronization in OFDM systems. Ma (US 7009931 B2) discloses synchronization in a multiple-input/multiple-output (MIMO) orthogonal frequency division multiplexing (OFDM) system for wireless applications. Huang (US 5991289 A) discloses synchronization method and apparatus for guard interval-based OFDM signals.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
03-21-2006

TEMESGHEN CHEBRETSAL
PRIMARY EXAMINER
3/21/06